Simple Factoring

Factoring is a way to "undo" multiplying out polynomials. There are many forms of factoring and this is the simplest. In this form, we look at each term and decide if there is anything common among them that we can factor out.

Example:

$$2x^2 + 4x^4 + 6x^3$$

$$= 2x^2(1 + 2x^2 + 3x)$$

In the first line, we notice that each term has a factor of $2x^2$. So, we can divide each term by $2x^2$ and write the original equation as a product of $2x^2$ and the new polynomial we obtained by dividing by $2x^2$.

Now, try factoring these:

1. $3 + 3x - 9xy$
2. $2pq - 10p^2q + 4q^2p^2$
3. $9r^5 + 81r^3 + 27r^4q$
4. $3k^3 + 4pk - 7$
5. $4xy - 16y^2x + 20x^2y$
6. $20k - 10k^2x + 70z^2$
7. $5x^3y^2z - 15xy^3z^2 + 35xy^2z^3$

8. $4x^2y + 12x^3y^3 - 16xy^2 + 4xy^5$

9. $3(x-1) + 2x(x-1) + 6x^2(x-1)$

10. $x^4(x-6) + 3x^3(x-6) + 12x^2(x-6) - 4x(x-6)$

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